CLAIMS

1. A digital mammography imaging method, in which the radiation that has passed through the object is detected on at least one sensor, which contains one or more preferably elongated sensor modules, wherein the said sensor module contains one or more pixel columns which receive image data, in which method the object to be imaged is arranged essentially motionless and is scanned across with a beam which originates from a radiation source, the focus of which being essentially motionless in space, the beam being limited to be narrower than the object to be imaged and adapted essentially to the active surface of the sensor, and in which method the sensor is moved in synch with the scanning movement of the beam while at the same time the said active surface is kept essentially at right angles to the beam on a plane formed by the scanning movement of the beam, characterized in that movement of the sensor or sensors is implemented by continuously adjusting the distance of the sensor or sensors from the radiation source in a such a way that its/their trajectory in direction of the scanning movement of the beam becomes essentially linear.

2. Imaging method according to claim 1, characterized in that the movement of the sensor or sensors is realized by one or more actuators, which may be operated programmatically.

3. Imaging method according to claim 1 or 2, characterized in that at least a part of the movements of the sensor or sensors are realized by mechanically forced control.

4. Imaging method according to one of the claims 1-3, characterized in that the said at least one sensor is moved in a such a way that it is connected to the transmission element, which is moved along an essentially linear trajectory and the said connection is realized in such a way that it enables mutual rotational movement of the transmission element and the sensor in the direction of said linear movement, whereby the said condition of perpendicular

orientation of the sensor surface is realized by tilting the sensor or sensors with respect to the said transmission element.

5. Imaging method according to one of the claims 1-3, characterized in that the said at least one sensor is arranged in functional connection with such a control element, which enables altering the distance between the sensor and the control element in the direction of the beam, the said control element is moved along a curved trajectory and the distance between the said at least one sensor and the control element is modified during the scanning of the beam in such a way that the trajectory of the sensor becomes linear.

6. Imaging method according to claim 5, characterized in that the said control element is moved in a guide groove, the curvature of radius of which corresponding the distance between the said control element and the focus of the radiation source, or it is moved otherwise along a trajectory being at the said distance from the focus.

7. Imaging method according to one of the claims 4-6, characterized in that the said transmission or control element is moved integrated with a pendulum arm, the focus of rotation of which being situated on the level of the focus of the radiation source.

8. Imaging method according to one of the claims 1-7, characterized in that the scanning movement of the beam is realized by moving a collimation element that limits the beam with the help of an actuator, which may be operated programmatically.

9. Imaging method according to one of the claims 1-8, characterized in that a collimation element that limits the beam is moved essentially in parallel with the said linear movement of the sensor.

10. Imaging method according to one of the claims 1-8, characterized in that the scanning movement of the beam is realized by moving the collimation element which limits the beam along the curved path, the curvature of

radius of which corresponding the distance between the said collimator and the focus of the radiation source.

11. Imaging method according to claim 9 or 10, characterized in that the radiation source is swivelled and the scanning movement of the beam is realized by moving the said collimation element in mechanical contact with the swivelling movement of the radiation source.

12. Imaging method according to one of the claims 9-11, characterized in that the movement of the collimation element and the linear movement of the sensor or sensors are synchronized mechanically, such as by connecting them to the same pendulum arm, the focus of rotation of which being situated at the level of the focus of the radiation source.

13. Imaging method according to claim 12, characterized in that the movement of the collimation element and the sensor or sensors in the direction of the scanning movement of the beam is synchronized by connecting them mechanically to the swivelling movement of the radiation source.

14. Imaging method according to one of the claims 1-13, characterized in that the sensor or sensors are arranged to be formed in the direction at right angles to the plane formed by the scanning movement of at least one sensor column containing two or more modules and the active surface of each of the modules is also positioned at right angles in relation to this direction with respect to the focus of the beam.

15. Imaging method according to one of the claims 1-14, characterized in that the said essentially linear movement of the sensor/sensors is realized under the essentially plane-like lower compression paddle structure in its close proximity.

16. Digital mammography imaging apparatus, which includes

- a radiation source (13),

- a sensor arrangement (15) for detecting radiation, which arrangement contains one or more sensors (50) formed of one or more preferably elongated sensor modules (510, 510', ...), which sensor module (510, 510', ...) contains one or more pixel columns which receive image data,
- means (16, 17) for positioning the object to be imaged, located within the area between the radiation source (13) and the sensor arrangement (15),
- means for limiting the beam (19) from the radiation source (13) essentially according to the active sensor surface of the said sensor arrangement (15),
- means for moving the beam across the object being positioned to be imaged and
- means for moving the said at least one sensor (50) which belongs to the sensor arrangement (15) in synch with the scanning movement of the said beam and keeping the said active sensor surface essentially at right angles to the beam on a plane formed by the scanning movement,

characterized in that

the imaging apparatus (1) includes means for adjusting the distance of the said sensor (50) or sensors from the radiation source (13) in such a way that the trajectory of the sensor (50) or sensors in the direction of the scanning movement of the beam becomes essentially linear.

17. Imaging apparatus according to claim 16, characterized in that it includes at least one actuator (20), which may be operated programmatically, for implementing the movement of the sensor (50) or sensors.

18. Imaging apparatus according to claim 16 or 17, characterized in that it includes means for implementing at least a part of the movements of the sensor (50) or sensors by mechanically forced control.

19. Imaging apparatus according to one of the claims 16-18, characterized in that it includes means for linearly moving the sensor (50) or sensors and means for tilting the sensor (50) or sensors by a mechanically forced control along with the linear movement.

20. Imaging apparatus according to one of the claims 16-19, characterized in that it includes a transmission element (28, 40) arranged to be connected to the sensor (50) or sensors and means for linearly moving the transmission element and for tilting the sensor (50) or sensors in relation with the said transmission element (28, 40) in the direction of the said linear movement.

21. Imaging apparatus according to claims 16-19, characterized in that it includes a control element (29) arranged to be moved along a curved trajectory in the direction of the scanning movement of the beam, which control element is arranged in a functional connection with the said at least one sensor (50) in such a way that their mutual distance in the direction of the beam is adjustable.

22. Imaging apparatus according to claim 21, characterized in that in order to form the said curved trajectory the apparatus includes a guide groove (34), the radius of curvature of which corresponding the distance between it and the focus (42) of the radiation source (13), or other means for moving the control element (29) along a trajectory having such a radius of curvature.

23. Imaging apparatus according to one of the claims 20-22, characterized in that it includes a pendulum arm (35), the rotation focus of which being arranged on the level of the focus (42) of the radiation source (13), whereby the said transmission element (28, 40) and/or control element (29, 37) is attached to the pendulum arm (35) in such a way that the sensor (50) or sensors may move in the direction of the longitudinal axis of the pendulum arm (35), or the pendulum arm (35) itself has been arranged to be adjusted by its length.

24. Imaging apparatus according to one of the claims 16-23, characterized in that the imaging apparatus includes means (20, 21, 22, 23) for moving the collimator element (19) that limits the beam essentially in parallel with the said linear movement of the sensor.

25. Imaging apparatus according to one of the claims 16-23, characterized in that the apparatus includes means for moving the collimator element (19) that limits the beam along a curved path, the radius of curvature of which corresponding the distance between it and the focus (42) of the radiation source (13).

26. Imaging apparatus according to one of the claims 18-22, characterized in that concerning means for moving the collimator element (19) and the sensor or sensors (50), respectfully, at least the other are arranged in mechanical contact in the said pendulum arm (35).

27. Imaging apparatus according to claim 26, characterized in that the collimator element (19), the sensor (50) or sensors and the radiation source (13) are arranged in mechanical contact with the said pendulum arm (35) in such a way that the said synchronization of the scanning movement of the beam and the movement of the sensor (50) or sensors takes place in a forced manner while the said pendulum arm (35) is moved by an actuator.

28. Imaging apparatus according to claim 17, characterized in that it includes actuators (20, 24), which may be operated programmatically, for realizing all the movements of the sensor or sensors (50) and the collimator elements.

29. Imaging apparatus according to one of the claims 16-28, characterized in that the sensor or sensors (50) are arranged to be formed, in the direction at right angles to the plane formed by the scanning movement, of at least one sensor column which contains two or more modules (510, 510', ...), and the active surface of each module (510, 510', ...) is positioned also in this direction at right angles to the focus (42) of the beam.

30. Imaging apparatus according to one of the claims 16-29, characterized in that said means for positioning the object to be imaged contain two radiolucent compression paddles (16, 17) or equivalent having essentially plane like surfaces.